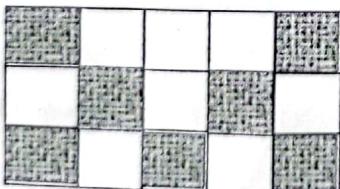


MATHEMATICS SEMINAR QUESTION 2024

Name:

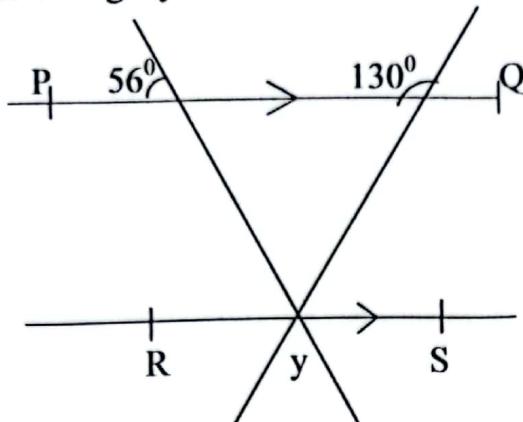
-
1. Workout: $\frac{0.6 + 0.4}{0.2}$
 2. Write 3095740 in words.
 3. Given that set $P=\{0,1,2,7,8\}$ and $T=\{2,3,5,7,9\}$. Find $n(P \cap T)^1$
 4. Write 0.0326 in scientific notation.
 5. Solve the equation; $2x - \frac{1}{3}(3-6x) = 23$
 6. Find the next number in the sequence 1, 10, 35, 84, 205, _____
 7. Using a ruler and a pair of compasses only, Construct an angle of 75^0
 8. Find the square root of 27.04
 9. A trader bought 160 mangoes at sh.1000 each, she paid sh.20,000 for transport to the market, she sold the mangoes and made a profit of 60%. At what price did the trader sell each mango?
 10. A farmer had 0.5 tones of millet to be packed in sachets of 500 grammes each. How many sachets did ~~she~~ get?
 11. Workout; $1000_{\text{two}} \div 10_{\text{two}}$
 12. Given that $x = y = 2$ and $z = 3$, Find the value of $x^2 + y(x+z)$
 13. The shaded part in the diagram below represents the girls in a school of 180 pupils



Give that $\frac{3}{4}$ of the boys are day scholars; calculate the number of boys who are day scholars in the school.

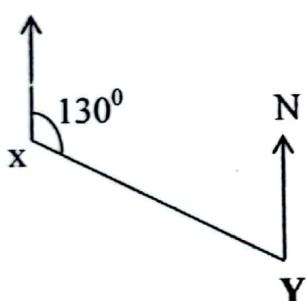
14. A foot ball match started at 2:45pm after 45 minutes, there was a break of 15 minutes. The match then took 50 minutes to end. At what time in 24 hours clock did the match end?

15. In the diagram below, lines PQ and RS are parallel. Study the diagram carefully and find the size of angle y.



16. A bus travelled a certain journey at an average speed of 90km per hour. Express the speed of the bus in metres per second.

17. Find the direction of town X from town Y in the diagram below.



18. Mr. Kyeyune had a bundle of bank notes numbered consecutively from YM 9834235 to YM9834304. If he had sh.1,400,000. Calculate the value of each note.

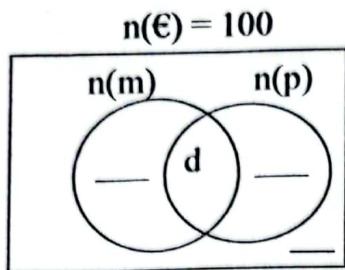
19. In a bag of apples, oranges and mangoes, the probability of picking an apple from a bag at random is $\frac{1}{4}$ and that of an orange is $\frac{2}{5}$. Find the probability of picking a mango from the bag.

20. Kiyemba borrowed money from a savings group that charges an interest rate of $8\frac{1}{3}\%$ per month. After a half a year, he paid back an interest of sh.450,000. Calculate the total amount of money paid back by Kiyemba at the end of that period.

SECTION B

21. At a party attended by 100 pupils, d pupils drank both Mirinda(M) and pepsi(p), 20 pupils drank pepsi only while d-4 pupils did not drink any of the two sodas. The number of pupils who drank Mirinda were thrice the number of pupils who drank both kinds of sodas.

a. Use the given information to complete the Venn diagram below.



b. Calculate the number of pupils who drank Mirinda.

22. Write two thousand, four hundred eight and sixty five thousandths in figures.

b. Find the product of the values of 4 and 6 in the above number

c. Solve: $302_m = 205_{\text{six}}$

23. A teacher went to the market and bought the following items. He was offered a discount of sh.1900

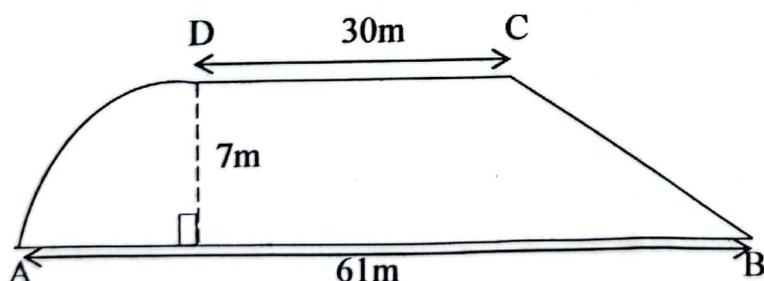
2kg of sugar at sh.4800 per Kg,

1500g of Rice at Sh.900 per $\frac{1}{4}$ kg

2.5 kg of beans.

If a teacher paid sh.20,600 for all the items, how much money did he pay for each Kilogram of beans?

24. The figure below shows a flower garden. Study it carefully and use it to answer the questions that follow.



a. Work out the area of the garden (take π as $\frac{22}{7}$)

b. Calculate the distance around the garden.

25. Keeya spent $\frac{1}{4}$ of his money on buying school uniform for his daughter, $\frac{1}{3}$ on books and $\frac{2}{3}$ of the remainder on food. The rest of the money was saved. If his expenditure was sh.52,000 more than what he saved. Calculate how much money Keeyya had at first.

26a). Using a ruler, and a pair of compasses only, construct a rhombus RSTV where line TV=6.5cm and angle VRS=135°.

b). Draw the diagonals RT and SV to intersect at O measure length RO

27a) Simplify: ${}^+4 - {}^+9 + {}^+6$

b). When marking an interview, a teacher awarded 5 marks for every correct answer and subtracted 2 marks for every wrong answer. The interview contained 20 questions. Nakitto scored 86 marks, How many correct answers did she get?

28. Workout: $2 \div 5$ (Finite 7)

b. Today is Saturday 19th October. What day of the week was it 18th June the same year.

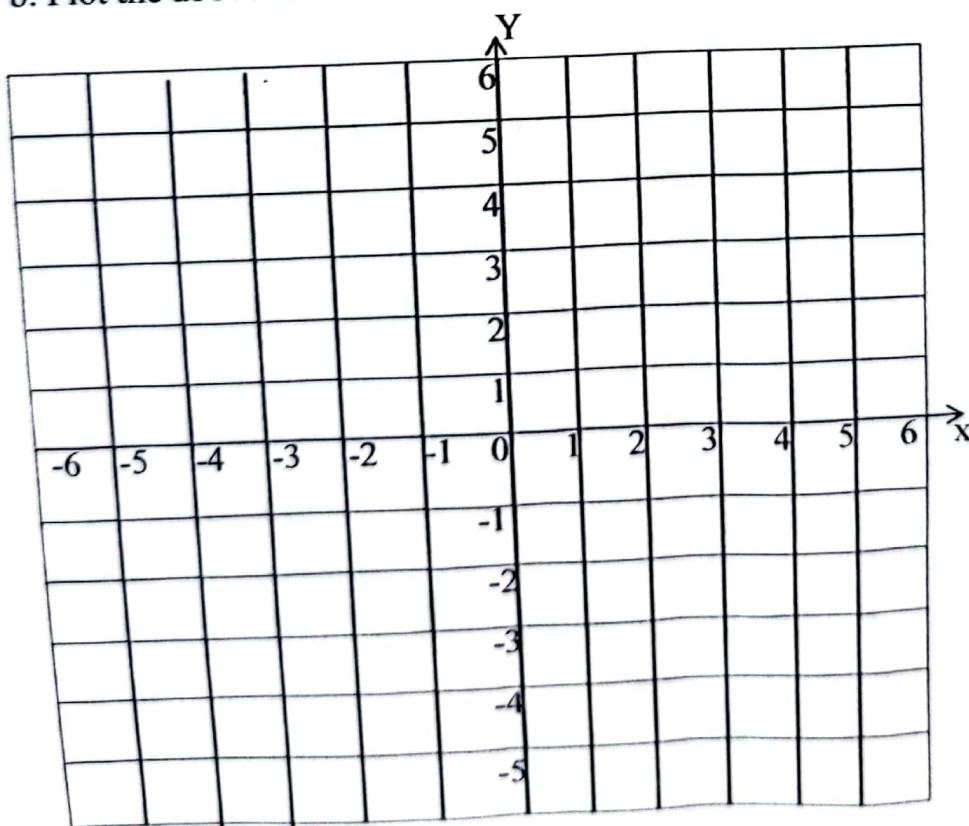
29a. Solve the equation; $4(h-2) - 3(2 - h) = 0$

b. Three traders Kamau, Adhiambo and Molly decided to raise sh.1,500,000 to start a project. Molly contributed sh. 100,000 less than the amount of money contributed by both Kamau and Adhiambo while Adhiambo contributed a third of what Kamau contributed. Calculate the amount of money Molly contributed.

30. Use the equation $2y = x + 3$ to complete the table below.

	A	B	C	D	E	F	G
X	3	—	-1	—	5	—	—
Y	—	2	—	0	—	$\frac{1}{2}$	-1

b. Plot the above coordinates on the grid below.



31a). Solve: $2^{3x} \div 2^{x+1} = 128$

b. A farmer employed six men to dig the Shamba in 12 days. After working for 2 days, two men failed to do the work. How many more days did it take to complete the work?

32a). A cylindrical solid figure has a circumference of 132cm and a height of 30cm. calculate the total surface area of the figure (Use π as $3\frac{1}{7}$)

b. A rectangular water tank is 2.0m long, 1.5m wide and 2.5m high. Calculate the capacity of the tank when it is full.

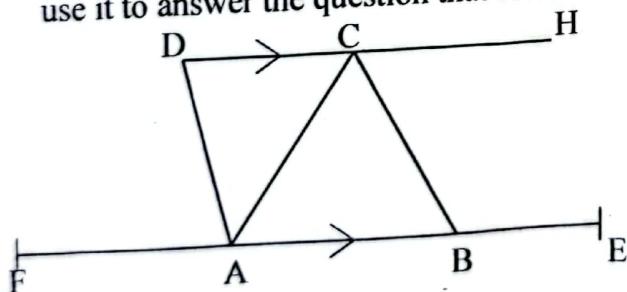
33. A school bought 10 litres of milk on Monday, 30 litres on Tuesday and 20 litres on Wednesday. The school bought equal number of litres on Thursday and Friday. The milk bought in five days was 150 litres. Express this information on a pie chart of radius 3cm.

34. Eletu sold a radio to Tenywa making a gain of $12\frac{1}{2}\%$. Tenywa later sold it to Kagaba making a loss of $33\frac{1}{3}\%$. If Kagaba paid sh.750,000 for the radio, how much money did Eletu pay for the radio?

35. At a factory, cylindrical tins of powder of diameter 5cm and height 10cm are packed into a box measuring 25cm by 30cm by 45cm. calculate the space left unoccupied after packing (take π as 3.14)

36. Town C is 40km away from town A on a bearing of 150^0 and town C is 50km away from town B on a bearing of 070^0 . Using a scale of 1cm to represent 10km, draw an accurate diagram showing the three towns.

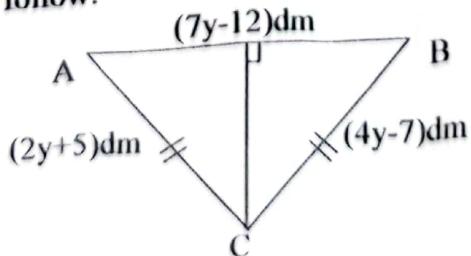
37. In the diagram below, line DH is parallel to FE, Angle $ACB = 75^0$ and angle $CBE = 135^0$. Angles FAD and DAC are in the ratio 2:1 respectively. Study the diagram and use it to answer the question that follows.



a). Calculate the size of angle ADC

b). The exterior angle of a regular polygon is 100^0 less than the interior angle. Calculate the interior angle sum of the polygon.

38). The figure below shows an isosceles triangle ABC. Study it carefully and use it to answer the questions that follow.



Workout;

- The perimeter of the figure
- The area of the figure

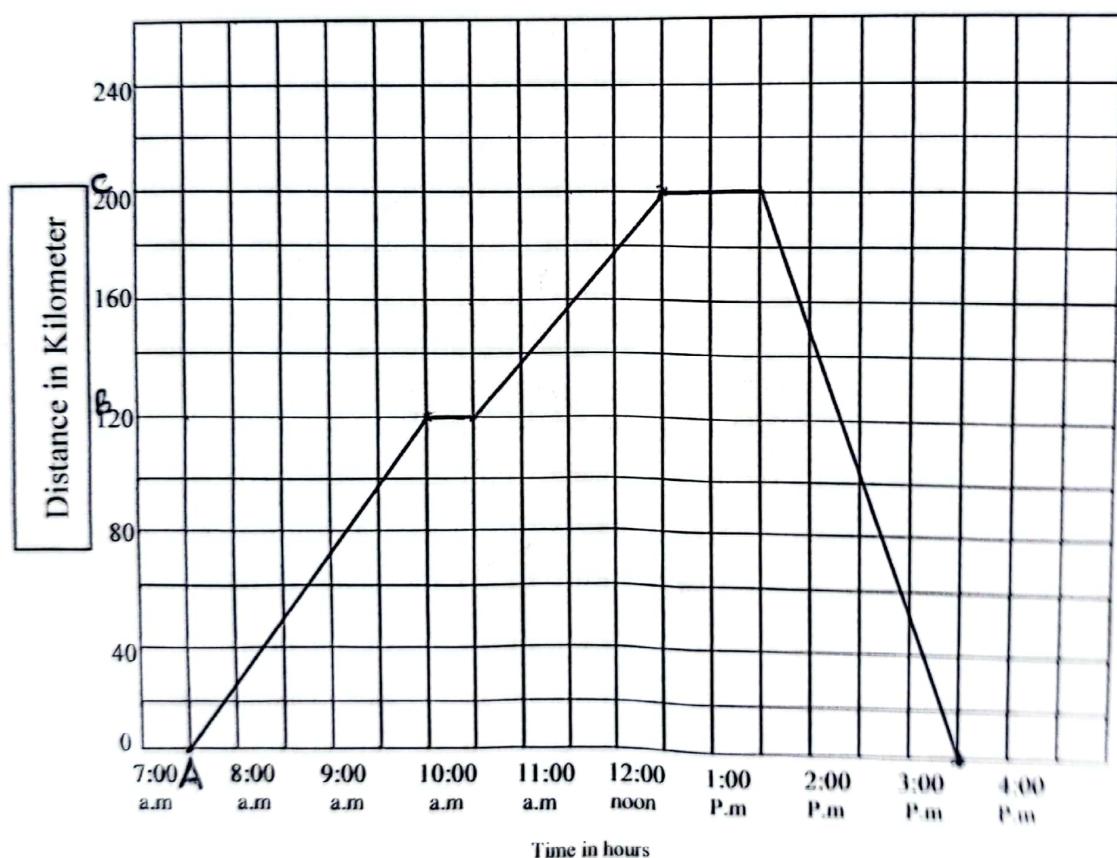
28
22
6 X

39). Simplify; $\frac{4}{5} \div \frac{9}{14}$ of $\frac{3}{7} + 2\frac{7}{15}$

b. $\frac{0.78 \times 0.018}{0.36 \times 1.3}$

40). A motorist travelled from town A to town C through town B as follows; He left town A at 7:30a.m travelling at a steady speed of 48km/hr reaching town B at 10:00a.m .He stayed at town B for 30 minutes, and then left town B and travelled to town C at a steady speed of 40km/hr for 2 hours. He stayed at town C for an hour and then returned back to town A at an average speed of 100km/hr.

a) Represent the motorist's Journey on the graph below.



b) Calculate the motorist's average speed for the whole Journey.

41a). Using a ruler and a pair of Compasses only, Construct a triangle PQR where line PQ=6cm, angle PQR = 90° and angle EPQ = 60° .

b. Bisect angle PQR such that the bisector line meets PR at M. Drop a Perpendicular from point M to meet line PQ at N.

c. Calculate the area of the triangle PQM

42. Odeke drove a tractor from his home to town through a distance of 5.94km. the wheel of the type made 1500 revolutions to cover the journey. Calculate in centimetres the radius of the wheel
(Use π as $3\frac{1}{7}$)

MATHEMATICS SEMINAR PRE-PLE

MARKING GUIDE

SECTION A

①

$$\underline{0.6 + 0.4}$$

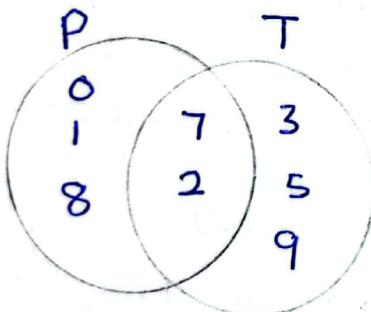
$$\begin{array}{r} 0.2 \\ 0.6 \\ + 0.4 \\ \hline 1.0 \end{array} \quad \left| \begin{array}{r} 1 \times 5 \\ \hline 10 \\ \hline 5 \end{array} \right.$$

2.

3,095,740

Three million, ninety-five thousand, seven hundred forty.

3.



$$(P \cap T)' = \{0, 1, 8, 3, 5, 9\}.$$

$$n(P \cap T)' = 6$$

④.

$$0.0326$$

$$0.0326 \times 10$$

$$0.326 \times 10$$

$$3.26 \times 10^2$$

⑤

$$2x - \frac{1}{3}(3-6x) = 23$$

method 1

$$2x - \frac{1}{3}(3-6x) = 23$$

$$(2x \times 3) - \frac{1}{3} \times 3(3-6x) = 23 \times 3$$

$$6x - 3 + 6x = 69$$

$$6x + 6x - 3 = 69$$

$$12x - 3 + 3 = 69 + 3$$

$$\frac{12x}{12} = \frac{72}{12}$$

$$x = 6$$

method 2:

$$2x - \frac{1}{3}(3-6x) = 23$$

$$2x - \left(\frac{1}{3} \times \frac{1}{3}\right) + \left(\frac{1}{3} \times \frac{2}{3}x\right) = 23$$

$$2x - 1 + 2x = 23$$

$$2x + 2x - 1 = 23$$

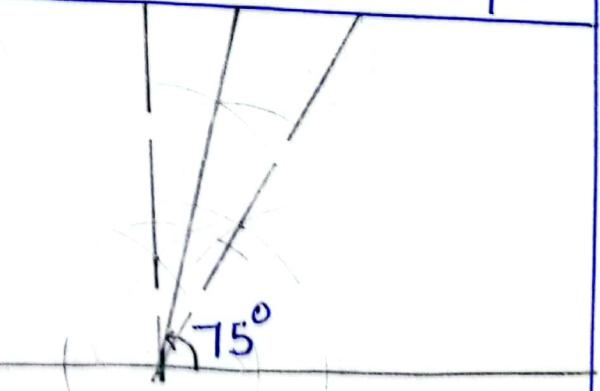
$$4x - 1 + 1 = 23 + 1$$

$$\frac{4x}{4} = \frac{24}{4}$$

$$x = 6$$

$$6. \quad \begin{array}{r} 1, 10, 35, 84, 205, 374 \\ + 3^2 + 5^2 + 7^2 + 11^2 + 13^2 + 15^2 \\ \hline 374 \end{array}$$

7.



8.

8.

$$\sqrt{27.04} = \sqrt{\frac{2704}{100}}$$

$$\sqrt{27.04} = \frac{2 \times 2 \times 13}{2 \times 5}$$

$$\sqrt{27.04} = \frac{5.2}{10}$$

$$\sqrt{27.04} = 5.2$$

$$\begin{array}{r} 2704 \\ 2 \overline{)2} \quad 1352 \\ \quad 2 \overline{)1} \quad 676 \\ \quad \quad 2 \overline{)1} \quad 338 \\ \quad \quad \quad 2 \overline{)1} \quad 169 \\ \quad \quad \quad \quad 13 \overline{)1} \quad 13 \\ \quad \quad \quad \quad \quad 13 \overline{)1} \quad 1 \end{array}$$

$$\begin{array}{r} 100 \\ 2 \overline{)1} \quad 50 \\ \quad 2 \overline{)1} \quad 25 \\ \quad \quad 5 \overline{)1} \quad 5 \\ \quad \quad \quad 5 \overline{)1} \quad 1 \end{array}$$

10. $1\text{tonne} = 1,000,000\text{g}$

 $0.5\text{tonne} = \frac{5}{10} \times 1,000,000\text{g}$
 $\underline{500,000\text{g}}$

No. of sachets.

 $\frac{500,000\text{g}}{50\text{g}}$

1000 sachets.

11. $1000_{\text{two}} \div 10_{\text{two}}$

 $(1 \times 2^3) \div (1 \times 2)$
 $(1 \times 2 \times 2 \times 2) \div (1 \times 2)$
 $8 \div 2$
 $4_{\text{ten.}}$

B	N	R
2	4	0
2	2	0
2	1	1
0	0	1

 100_{two}

9. cost price of 160 mangoes.

$$160 \times \text{Sh. } 1000$$

$$\text{Sh. } 160,000$$

Total amount spent on the cost of 160 mangoes.

$$\text{Sh. } 160,000$$

$$+\text{Sh. } 20,000$$

$$\underline{8\text{h. } 180\ 000}$$

Selling price of 160 mangoes.

$$100\% + 60\% = 160\%$$

$$\frac{160}{100} \times \text{Sh. } 180,000$$

$$\underline{\text{Sh. } 288,000}$$

Selling price of each mango.

$$\frac{36}{18} \text{ } 00$$

$$\underline{\text{Sh. } 28.8,00\text{¢}}$$

$$+6\text{¢}$$

$$\cancel{x}$$

$$\underline{\text{Sh. } 1800}$$

12. $x = y = -2 \text{ and } z = 3$

$$x^2 + y(x+z)$$

$$(x \times x) + y(x+z)$$

$$(-2 \times -2) + -2(-2+3)$$

$$+4 + -2(1)$$

$$+4 + (-2 \times 1)$$

$$+4 + (-2)$$

$$+4 - 2$$

$$+2$$

No. of boys who are day scholars.

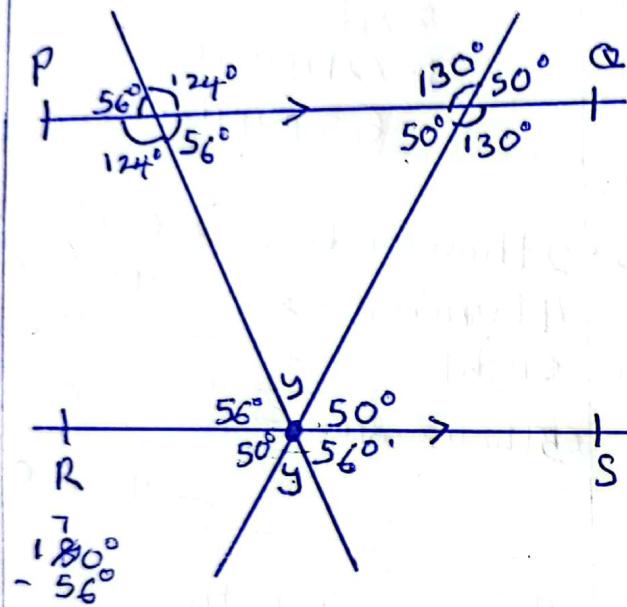
$$\frac{8^2 \times 3^1 \times 36}{15^2 \times 4} = 72$$

72 boys

SECTION A

hrs	mins	$155 \div 60 = 2 \text{ r } 35$
2	45	Time in 24 hour
0	45	
+ 0	15	hrs mins
0	50	$\frac{12}{16} \quad 35$
4 35 p.m.		16 35 hours

15.



Method 1

$$y + 56^\circ + 50^\circ = 180^\circ \text{ (angles under a triangle)}$$

$$y + 106^\circ - 106^\circ = 180^\circ - 106^\circ$$

$$y = 74^\circ$$

Method 2

$$y + 56^\circ + 50^\circ = 180^\circ \text{ (angles on a straight line)}$$

$$y + 106^\circ - 106^\circ = 180^\circ - 106^\circ$$

$$y = 74^\circ$$

Method 3

$$y + 56^\circ + 50^\circ + y + 56^\circ + 50^\circ = 360^\circ$$

$$y + y + 56^\circ + 50^\circ + 56^\circ + 50^\circ = 360^\circ$$

$$2y + 212^\circ - 212^\circ = 360^\circ - 212^\circ$$

$$\frac{2y}{2} = \frac{148^\circ}{2}$$

$$y = 74^\circ$$

16. 90 km/h. to m/s.

$$D = (90 \times 1000) \text{ m.}$$

$$D = 90,000 \text{ m.}$$

$$T = 3600 \text{ s.}$$

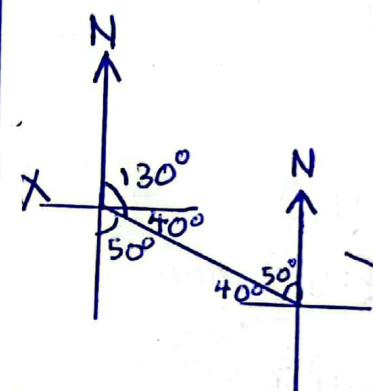
$$S = \frac{D}{T}$$

$$S = \frac{90,000 \text{ m.}}{3600 \text{ s}}$$

A,

$$S = 25 \text{ m/s.}$$

17.



N 50° W.

$$18. YM9834 \overset{2}{\cancel{8}} \overset{9}{\cancel{0}} \overset{1}{\cancel{4}}$$

$$- YM9834235$$

$$691:$$

70 notes.

Value of each note.

$$\text{Sh. t, } \frac{2}{400,000} \phi$$

$$7\phi$$

$$\text{Sh. } 20,000$$

$$\frac{1}{4} + \frac{2}{5}$$

$$\frac{\left(\frac{1}{4} \times 20\right) + \left(\frac{2}{5} \times 20\right)}{20}$$

$$\frac{5+8}{20}$$

$$\frac{13}{20}$$

Probability of picking a mango.

$$1 - \frac{13}{20}$$

$$\frac{20}{20} - \frac{13}{20}$$

$$\frac{7}{20}$$

$$(b) 2d + d + 20 + d - 4 = 120$$

$$2d + d + d + 20 - 4 = 100$$

$$4d + 16 - 16 = 100 - 16$$

$$\frac{4d}{4} = \frac{84}{4}$$

$$d = 21$$

No. of pupils who drank Mirinda

$$3 \times d$$

$$(3 \times 21) \text{ pupils.}$$

$$63 \text{ pupils.}$$

$$20. R = 8 \frac{1}{3} \div 100$$

$$R = \frac{1}{3} \times \frac{1}{100}$$

$$R = \frac{1}{300}$$

$$P \times R \times T = S.I$$

$$P \times \frac{1}{300} \times 6 = \text{Sh. } 450,000.$$

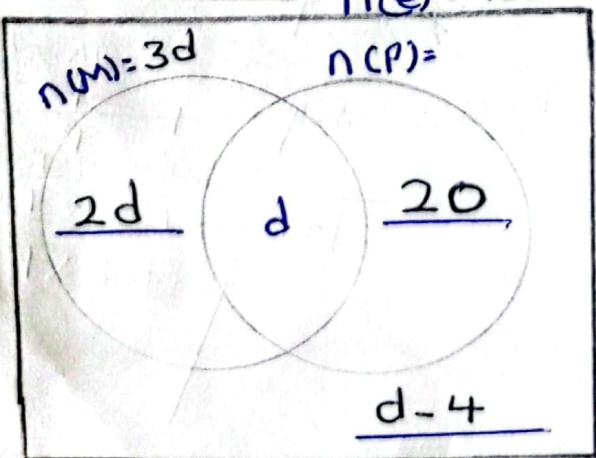
$$2 \times P = \text{Sh. } 450,000 \times 2$$

$$P = \text{Sh. } 900,000.$$

Amount he paid back:

$$\begin{array}{r} \text{Sh. } 900,000 \\ + \text{Sh. } 450,000 \\ \hline \text{Sh. } 1,350,000 \end{array}$$

Section B. $n(E) = 100$



$$2 \text{ thousand} \rightarrow 2,000.000$$

$$4 \text{ hundred} \rightarrow 400.000$$

$$\text{eight} \rightarrow 8.000$$

$$65 \text{ thousandths} \rightarrow 0.065$$

$$\underline{2,408.065}$$

$$(b) \begin{array}{r} \text{TH H T O + h th} \\ 2408.065 \\ \hline \end{array}$$

$$\begin{array}{r} \downarrow 6 \times \frac{1}{100} = \frac{6}{100} \\ \downarrow 4 \times 100 \\ 400 \end{array}$$

$$\begin{array}{r} \text{Product} \\ \hline \frac{6}{100} \times 400 \\ 24 \end{array}$$

$$(c) 302_m = 205_{10}$$

$$(3m^2) + (2m^1) + (5m^0) = (2 \times 6^2) + (5 \times 6^0)$$

$$3m^2 + (2 \times 1) = (2 \times 6 \times 6) + (5 \times 1)$$

$$3m^2 + 2 = 72 + 5$$

$$3m^2 + 2 = 77$$

$$3m^2 + 2 - 2 = 77 - 2$$

$$\frac{3m^2}{3} = \frac{75}{3}$$

$$\sqrt{m^2} = \sqrt{25}$$

$$m = 5$$

M is base five.

Sugar + Rice	
Sh. 9600	Sh. 9600
+ Sh. 4800	Sh. 5400
Sh. 4800	Sh. 15000
<u>Bill:</u>	
Sh. 20600	Sh. 7500 ÷ 25
Sh. 1900	10
Sh. 22500	Sh. 7500 × 10 25
<u>Beans:</u>	
Sh. 12500	Sh. 3000
- Sh. 15000	
Sh. 7500	

Cost of each kg of beans

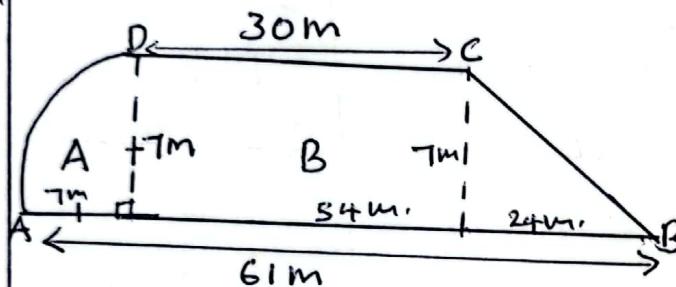
$$\text{Sh. } 7500 \div 25$$

$$\text{Sh. } 7500 \div \frac{25}{10}$$

$$\text{Sh. } 7500 \times \frac{10}{25}$$

$$\text{Sh. } 3000$$

24.



(a) Area of A.

$$\begin{aligned} A &= \frac{1}{4}\pi r^2 \\ A &= \frac{1}{4} \times \frac{22}{7} \times 7 \times 7 \text{ m}^2 \\ A &= \frac{38.5}{2} \text{ m}^2 \\ A &= 38.5 \text{ m}^2 \end{aligned}$$

Area of B.

$$\begin{aligned} A &= \frac{1}{2}h(a+b) \\ A &= \frac{1}{2} \times 7 \times (30+54) \text{ m}^2 \\ A &= \frac{1}{2} \times 7 \times 84 \text{ m}^2 \\ A &= 294 \text{ m}^2 \end{aligned}$$

Total area.

$$\begin{aligned} &294.0 \text{ m}^2 \\ &+ 38.5 \text{ m}^2 \\ &\hline 332.5 \text{ m}^2 \end{aligned}$$

(b) Length of AD

$$\begin{aligned} L &= \frac{1}{4}\pi d \\ L &= \frac{1}{4} \times \frac{22}{7} \times 14 \text{ m} \\ L &= 11 \text{ m} \end{aligned}$$

Length of CB.

$$\begin{aligned} a^2 + b^2 &= c^2 \\ (7 \text{ m})^2 + (24 \text{ m})^2 &= c^2 \\ (7 \text{ m} \times 7 \text{ m}) + (24 \text{ m} \times 24 \text{ m}) &= c^2 \\ 49 \text{ m}^2 + 576 \text{ m}^2 &= c^2 \\ \sqrt{c^2} &= \sqrt{625 \text{ m}^2} \\ c &= 25 \text{ m} \end{aligned}$$

Total distance.
 $(61 + 25 + 30 + 11) \text{ m.}$
127 m.

25. Product.

$$4 \times 3 \times 3 = 36$$

U	U	B	B	f	f
V	U	B	B	f	S
V	U	B	B	f	S
U	B	B	f	f	S
U	B	B	f	f	S
U	B	B	f	f	S

uniform

$$\frac{1}{4} \times 369$$

9 parts

$$\frac{1}{3} \times 3612$$

112 parts

$$\frac{2}{3} \times 185$$

food

$$\frac{2}{3} \times 185$$

10 parts

Difference in parts

$$31 \text{ parts} - 5 \text{ parts}$$

26 parts

In one part

$$\text{Sh. } 52000$$

26

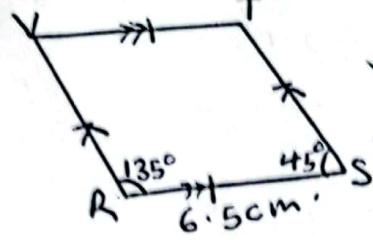
$$\text{Sh. } 2000$$

Amount he had at first

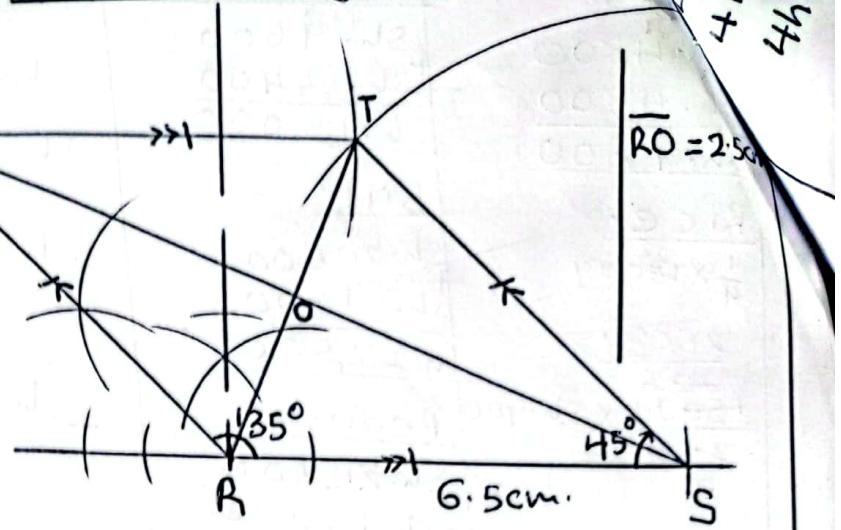
$$\text{Sh. } 2000 \times 36$$

$$\text{Sh. } 72000$$

26 Sketch diagram.



Accurate diagram.



$$\begin{aligned}
 & \text{(a)} -4 + 9 + 6 \\
 & -4 + (9) + (6) \\
 & (-4 - 9) + 6 \\
 & -13 + 6 \\
 & \hline -7
 \end{aligned}$$

b) Total marks

$$5 \times 20$$

100 Marks

Marks lost on each question

$$3+2=7 \text{ marks}$$

Total marks lost

$$09$$

$$10$$

$$-86$$

14 marks

No. of wrong answers

$$\frac{2}{14} \text{ marks}$$

7 marks

No. of correct answers

$$20 - 2$$

18 correct answers

28 Method 1

$$2 \div 5 \text{ (finite)}.$$

$$2 \text{ (finite)} = \{2, 9, 16, 23, 30, \dots\}$$

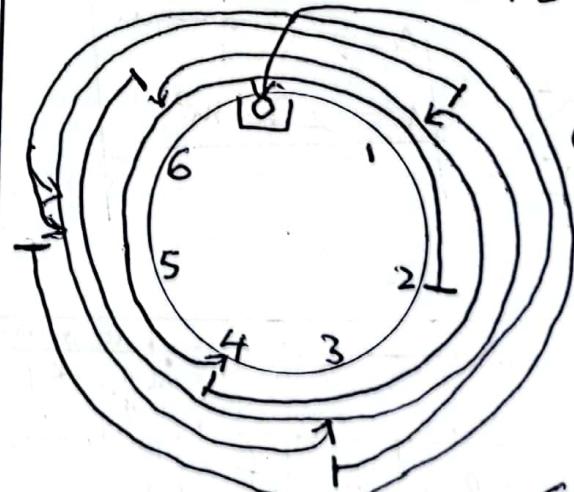
$$30 \div 5 = 6 \text{ (finite)}.$$

$$\frac{6}{30}$$

$$\therefore 2 \div 5 = 6 \text{ (finite)}$$

Method 2.

$$2 \div 5 = -(\text{finite})$$



6 times

$$2 \div 5 = 6 \text{ (finite)}.$$

(b)

June	July	Aug	Sept	Oct
30-18	30	31	30	19

12 days.

Total number of days

$$12 + 31 + 31 + 30 + 19$$

$$123 \text{ days}$$

S M T W T F S.

$$0 \ 1 \ 2 \ 3 \ 4 \ 5 \ 6$$

Day - 123 = - (finite)

$$6 - \underline{\underline{123}}$$

$$6 - 1 = 5$$

$$5 - 4 = 1 \text{ (finite)}$$

The day was a Tuesday.

R.O.
"2"

$$\begin{aligned}
 & + (h-2) - 3(2-h) = 0 \\
 & 4h - 8 - 6 + 3h = 0 \\
 & 4h + 3h - 8 - 6 = 0 \\
 & 7h - 14 + 14 = 0 + 14 \\
 & \frac{7h}{7} = \frac{14}{7} \\
 & h = 2
 \end{aligned}$$

(b) Let Kamau's contribution be P .

Kamau	Adhiambo	Molly	Total contribution
P	$\frac{P}{3}$	$(P+P) - Sh. 100,000$	Sh. 1,500,000

$$P + \frac{P}{3} + P + \frac{P}{3} - Sh. 100,000 = Sh. 1,500,000$$

$$(P \times 3) + (\frac{P \times 3}{3}) + (P \times 3) + (\frac{P \times 3}{3}) - (Sh. 100,000 \times 3) = Sh. 1,500,000 \times 3.$$

$$3P + P + 3P + P - Sh. 300,000 = Sh. 4,500,000$$

$$8P - Sh. 300,000 + Sh. 300,000 = Sh. 4,500,000 + Sh. 300,000$$

$$\frac{8P}{8} = \frac{Sh. 4,800,000}{8}$$

$$P = Sh. 600,000.$$

Molly's contribution.

$$(Sh. 600,000 + Sh. \frac{600,000}{3}) - Sh. 100,000$$

$$(Sh. 600,000 + Sh. 200,000) - Sh. 100,000$$

$$Sh. 800,000 - Sh. 100,000$$

$$Sh. 700,000.$$

Method 2.

Let the common ratio be P .

Adhiambo	Kamau	Molly	Total contribution
P	$3P$	$4P - Sh. 100,000$	Sh. 1,500,000

$$P + 3P + 4P - Sh. 100,000 = Sh. 1,500,000.$$

$$8P - Sh. 100,000 + Sh. 100,000 = Sh. 1,500,000 + Sh. 100,000$$

$$\frac{8P}{8} = \frac{Sh. 1,600,000}{8}$$

$$P = Sh. 200,000.$$

Molly:

$$(4 \times Sh. 200,000) - Sh. 100,000$$

$$Sh. 800,000 - Sh. 100,000$$

$$Sh. 700,000.$$

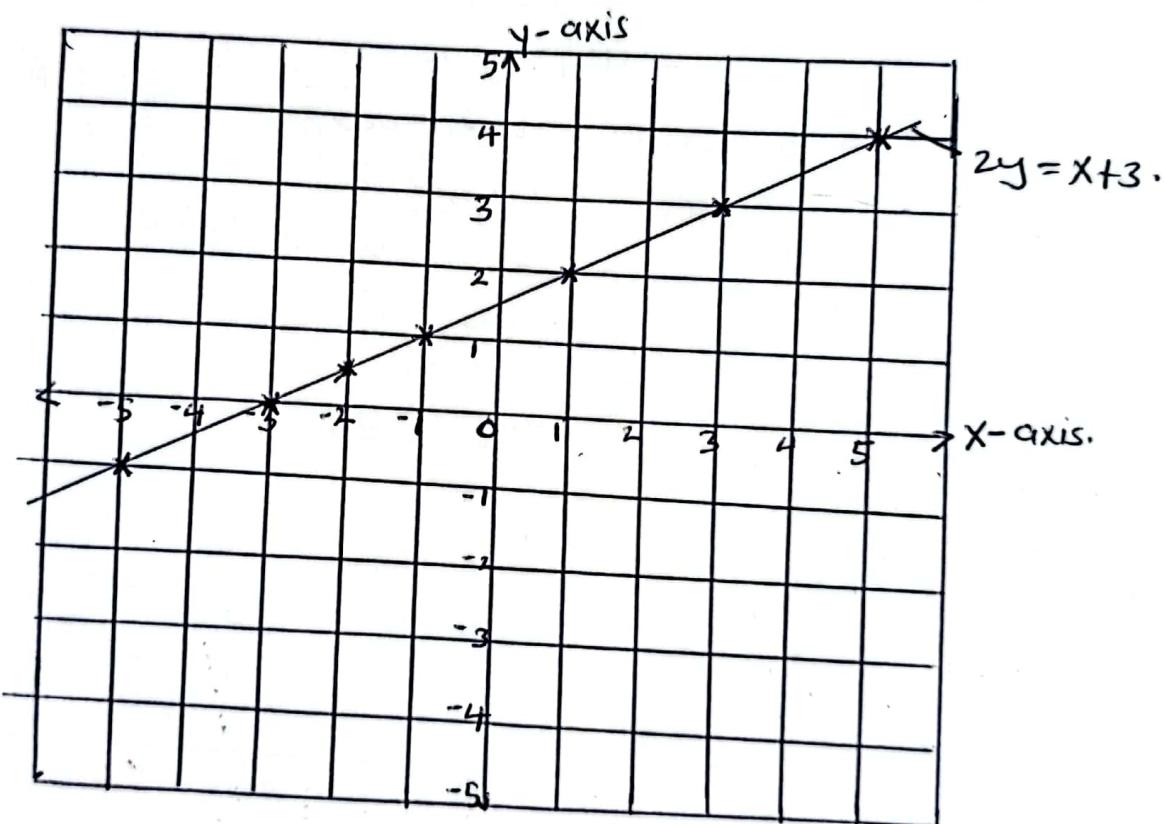
$$2y = x + 3$$

x	3	1	-1	-3	5	-2	-5
y	3	2	1	0	4	1/2	-1

$$\begin{array}{l|l|l} 2y = x + 3 & x + 3 = 2y & 2y = x + 3 \\ 2y = 3 + 3 & x + 3 = 2 \times 2 & 2y = -1 + 3 \\ \frac{2y}{2} = \frac{6}{2} & x + 3 = 4 & \frac{2y}{2} = \frac{2}{2} \\ y = 3. & x + 3 - 3 = 4 - 3 & y = 1 \end{array}$$

$$\begin{array}{l|l} x + 3 = 2y & x + 3 = 2x0 \\ x + 3 = 2 \times 0 & x + 3 = 0 \\ x + 3 = 0 & x + 3 - 3 = 0 - 3 \\ x + 3 - 3 = 0 - 3 & x = -3 \\ x = -3 & x = -2 \end{array}$$

$$\begin{array}{l|l|l} 2y = x + 3 & x + 3 = 2y & x + 3 = 2x - 1 \\ 2y = 5 + 3 & x + 3 = 2 \times -1 & x + 3 = -2 \\ \frac{2y}{2} = \frac{8}{2} & x + 3 - 3 = -2 - 3 & x + 3 - 3 = -2 - 3 \\ y = 4 & x = -5 & x = -5 \end{array}$$



$$\textcircled{Q} \quad 2^{3x} \div 2^{x+1} = 128$$

$$2^{3x} \div 2^{x+1} = 2^7$$

$$2^{3x-(x+1)} = 2^7$$

$$3x - (x+1) = 7$$

$$3x - x - 1 = 7$$

$$2x - 1 + 1 = 7 + 1$$

$$\frac{2x}{2} = \frac{8}{2}$$

$$\begin{matrix} 1 & 2 & 8 \\ 2 & \swarrow & \\ 6 & 4 & \\ 2 & \swarrow & \\ 3 & 2 & \\ 2 & \swarrow & \\ 1 & 6 & \\ 2 & \swarrow & \\ 8 & \\ 2 & \swarrow & \\ 4 & \\ 2 & \swarrow & \\ 2 & \\ 2 & \swarrow & \\ 1 & \end{matrix}$$

men \rightarrow 12 days.

After 2 days.

No. of men remained

$$6 - 2 = 4 \text{ men.}$$

No. of days remained

$$(12 - 2) \text{ days}$$

10 days.

$$F \times T = F \times T'$$

$$\frac{4}{4} \times T = (6^3 \times 10^5) \text{ days.}$$

$$T = 15 \text{ days}$$

Total time taken

$$(15 + 2) \text{ days}$$

17 days.

No. of more days.

(17 - 12) days

5 more days.

32(a)

Value of radius.

$$\pi d = C$$

$$7 \times \frac{22}{7} d = 132 \text{ cm} \times 7$$

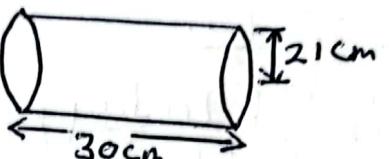
$$\frac{22}{7} d = \frac{132}{2} \text{ cm} \times 7$$

$$d = 42 \text{ cm}$$

$$r = \frac{d}{2}$$

$$r = \frac{21}{2} \text{ cm}$$

$$r = 21 \text{ cm.}$$



Total surface area.

$$T.S.A = 2\pi r(r+h)$$

$$T.S.A = 2 \times \frac{22}{7} \times \frac{3}{2} \text{ cm} (21+30) \text{ cm.}$$

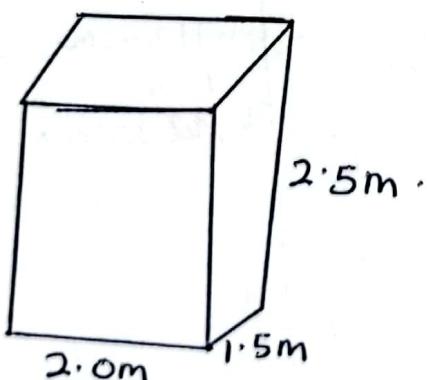
$$T.S.A = 132 \text{ cm} (51) \text{ cm.}$$

$$T.S.A = 132 \text{ cm} \times 51 \text{ cm}$$

$$T.S.A = 6732 \text{ cm}^2.$$

$$\begin{array}{r}
 & 1 & 3 & 2 \\
 \times & 5 & 1 \\
 \hline
 & 1 & 3 & 2 \\
 + & 6 & 0 & 0 \\
 \hline
 & 6 & 7 & 3 & 2
 \end{array}$$

(b)



Length in cm.

$$1 \text{ m} = 100 \text{ cm.}$$

$$2.0 \text{ m} = 2 \times 100 \text{ cm}$$

$$200 \text{ cm.}$$

$$1 \text{ m} = 100 \text{ cm}$$

$$1.5 \text{ m} = \frac{15}{10} \times 100 \text{ cm}$$

$$150 \text{ cm.}$$

$$1 \text{ m} = 100 \text{ cm.}$$

$$2.5 \text{ m} = \frac{25}{10} \times 100 \text{ cm}$$

$$250 \text{ cm.}$$

Volume of the full tank.

$$V = L \times W \times h.$$

$$V = 200 \text{ cm} \times 150 \text{ cm} \times 250 \text{ cm.}$$

$$V = 300000 \text{ cm}^3 \times 250 \text{ cm.}$$

$$V = 7500000 \text{ cm}^3.$$

No. of litres.

$$7500000 \text{ cm}^3$$

$$1000 \text{ cm}^3$$

$$7500 \text{ litres.}$$

33

MON	Tue	Wed	Thur	Fri
10	30	20	X	X

Let the number of
bought on Thursday
and Friday,

$$X + X + 10 + 30 + 20 = 150$$

$$2X + 60 - 60 = 150 - 60$$

$$\frac{2X}{2} = \frac{90}{2}$$

$$X = 45.$$

Monday

$$\begin{array}{r} 2 \\ \times 10 \\ + 50 \\ \hline 100 \\ + 50 \\ \hline 150 \\ \times 360^\circ \\ \hline 540^\circ \\ 24^\circ \end{array}$$

Tuesday

$$\begin{array}{r} 2 \\ \times 30 \\ + 50 \\ \hline 60 \\ + 50 \\ \hline 110 \\ 72^\circ \end{array}$$

Wednesday

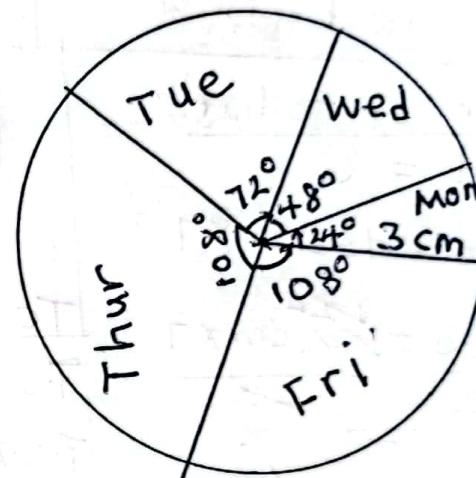
$$\begin{array}{r} 4 \\ \times 20 \\ + 50 \\ \hline 80 \\ + 50 \\ \hline 130 \\ 48^\circ \end{array}$$

Thursday

$$\begin{array}{r} 3 \\ \times 45 \\ + 50 \\ \hline 135 \\ + 50 \\ \hline 185 \\ 108^\circ \end{array}$$

Friday

$$108^\circ$$



34

Amount paid by Tenywa.

$$100\text{/-}33\frac{1}{3}\%$$

$$66\frac{2}{3}\%$$

$$66\frac{2}{3}\% \div 100$$

$$66\frac{2}{3} \times \frac{1}{100}$$

$$\frac{200}{3} \times \frac{1}{100}$$

$$\frac{2}{3}.$$

$$\text{Sh. } 750,000 \div \frac{2}{3}$$

$$\text{Sh. } 1125,000 \times \frac{3}{2}$$

$$\text{Sh. } 1,125,000$$

Amount paid by Eletu.

$$100\text{/-}12\frac{1}{2}\%$$

$$112\frac{1}{2}\%$$

$$\frac{225}{2} \div \frac{100}{1}$$

$$\frac{45}{2} \times \frac{1}{100}$$

$$\frac{20}{4}$$

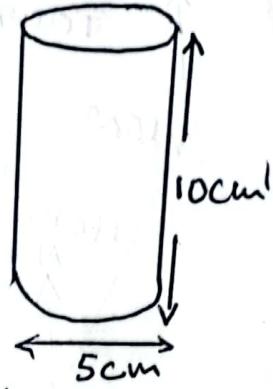
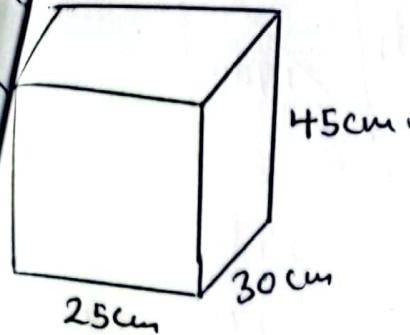
$$\frac{9}{8}$$

$$\text{Sh. } 1125000 \div \frac{9}{8}$$

$$125$$

$$\text{Sh. } 1125000 \times \frac{8}{9},$$

$$\text{Sh. } 1000,000$$



No. of tins that fill the box.

$$\frac{L}{d} \times \frac{W}{d} \times \frac{H}{h}$$

$$\frac{25\text{cm}}{5\text{cm}} \times \frac{30\text{cm}}{5\text{cm}} \times \frac{45\text{cm}}{10\text{cm}}$$

$$5 \times 6 \times 4$$

120 tins.

Volume of the box.

$$V = L \times W \times h$$

$$V = 25\text{cm} \times 30\text{cm} \times 45\text{cm}$$

$$V = 750\text{cm}^2 \times 45\text{cm}$$

$$V = 33750\text{cm}^3$$

Volume of 120 tins.

$$V = \pi r^2 h \times 120$$

$$V = \frac{3.14 \times 5^2 \times 10}{100} \times 120$$

$$V = 314 \text{cm} \times 5\text{cm} \times 150\text{cm}$$

$$1\phi$$

$$V = 23,550\text{cm}^3$$

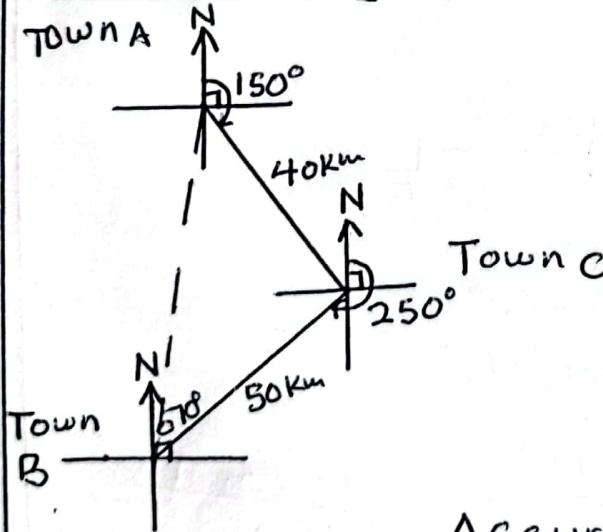
Volume left unoccupied.

$$33750\text{cm}^3 - 23550\text{cm}^3$$

$$10,200\text{cm}^3$$

36

Sketch diagram.



Bearing of B from C.

$$\begin{array}{r} 180^\circ \\ + 070^\circ \\ \hline 250^\circ \end{array}$$

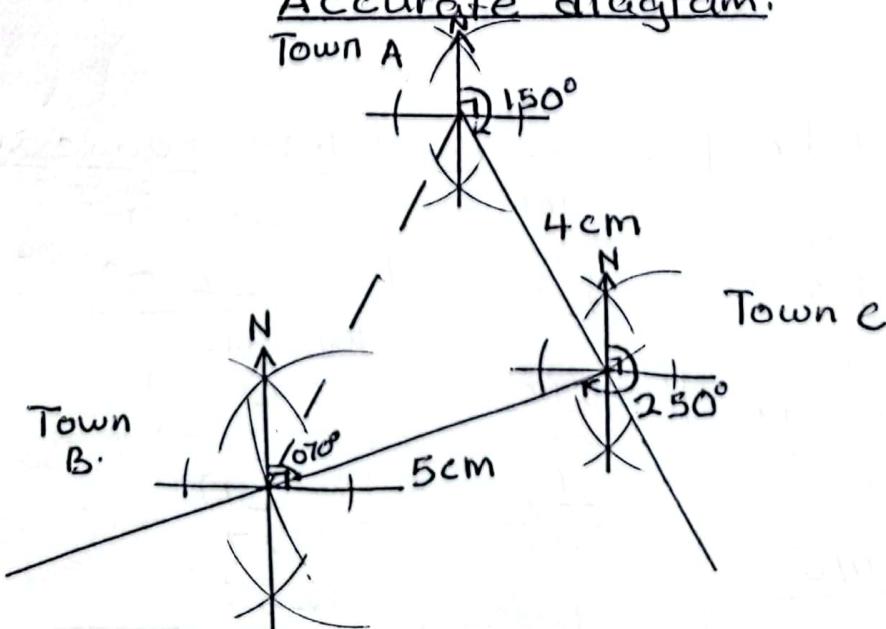
$$1\text{cm} \rightarrow 10\text{km}$$

$$? \text{cm} \rightarrow \frac{140\text{km}}{10\text{km}} = 14\text{cm}$$

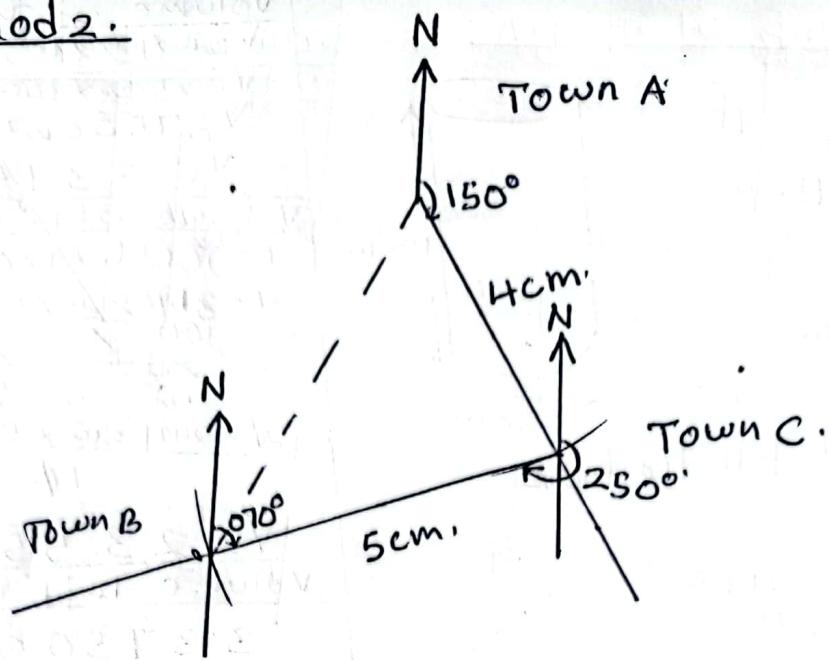
$$? \text{cm} \rightarrow \frac{50\text{km}}{10\text{km}} = 5\text{cm}$$

$$\begin{array}{r} 2150^\circ \\ - 180^\circ \\ \hline 070^\circ \end{array}$$

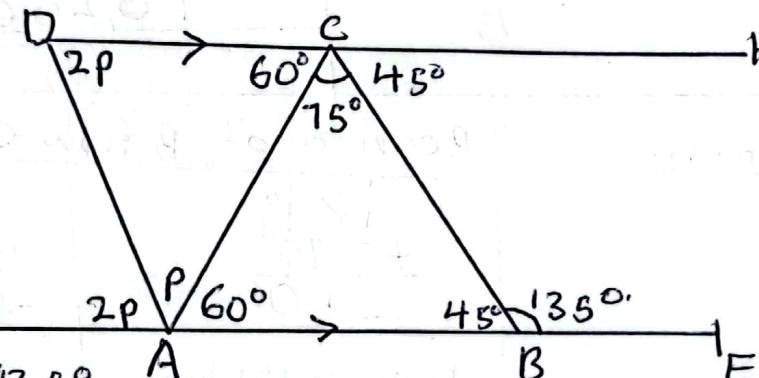
Accurate diagram.



36

method 2.

37



Let the
common
factor be
 p .

$$\begin{array}{r} 180^\circ \\ - 135^\circ \\ \hline 45^\circ \end{array}$$

$$\begin{array}{r} 135^\circ \\ - 75^\circ \\ \hline 60^\circ \end{array}$$

$$2p + p + 60^\circ = 180^\circ$$

$$3p + 60^\circ - 60^\circ = 180^\circ - 60^\circ$$

$$\frac{3p}{3} = \frac{120^\circ}{3}$$

$$p = 40^\circ$$

$$\begin{array}{r} \text{(a) } \angle ADC = 2p. \\ 2 \times p \\ 2 \times 40^\circ \\ \hline 80^\circ \end{array}$$

(b) Let the sum be P .

Exterior

$$\begin{array}{r} P - 100^\circ \\ 140^\circ - 100^\circ \\ \hline 40^\circ \end{array}$$

$$n = \frac{360^\circ}{4 \text{ ext}}$$

$$n = \frac{360^\circ}{40^\circ}$$

$$n = 9 \text{ sides.}$$

Interior angle sum.

$$\begin{array}{r} 140^\circ \times 9 \\ 1260^\circ \end{array}$$

Method 2.

$$180^\circ(n-2)$$

$$180^\circ(9-2)$$

$$180^\circ(7)$$

$$180^\circ \times 7$$

$$1260^\circ$$

Sum	Exterior	Sum.
P	$P - 100^\circ$	180°

$$P + p - 100^\circ = 180^\circ$$

$$2p - 100^\circ + 100^\circ = 180^\circ + 100^\circ$$

$$\frac{2p}{2} = \frac{280^\circ}{2}$$

$$p = 140^\circ$$

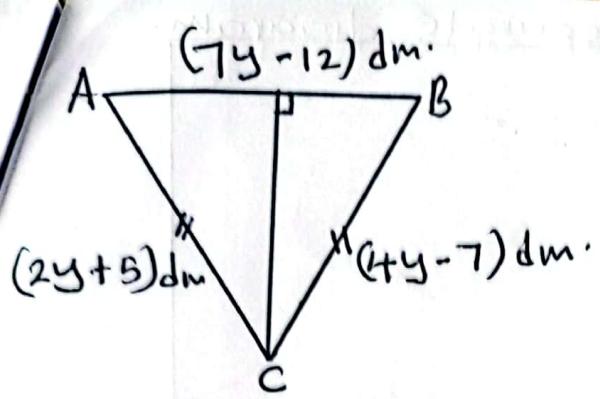
$$\underline{\underline{P = 140^\circ}}$$

$$P + p - 100^\circ = 180^\circ$$

$$n = \frac{360^\circ}{4 \text{ ext}}$$

$$n = \frac{360^\circ}{40^\circ}$$

$$n = 9 \text{ sides.}$$



$$(a) (4y - 7) \text{ dm} = (2y + 5) \text{ dm}$$

$$4y - 7 = 2y + 5.$$

$$4y - 2y - 7 = 2y - 2y + 5$$

$$2y - 7 = 5$$

$$2y - 7 + 7 = 5 + 7$$

$$\frac{2y}{2} = \frac{12}{2}$$

$$y = 6$$

1st Side:

$$(7xy - 12) \text{ dm}$$

$$(7 \times 6 - 12) \text{ dm}$$

$$(42 - 12) \text{ dm}$$

$$30 \text{ dm.}$$

$$P = S + 2S.$$

$$P = 30 \text{ dm} + 2 \times 17 \text{ dm}$$

$$P = 30 \text{ dm} + 34 \text{ dm.}$$

$$P = 64 \text{ dm.}$$

2nd side:

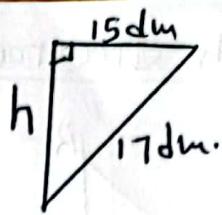
$$(2xy + 5) \text{ dm.}$$

$$(2 \times 6 + 5) \text{ dm}$$

$$(12 + 5) \text{ dm}$$

$$17 \text{ dm.}$$

(b)



$$\text{from } a^2 + b^2 = c^2$$

$$h^2 + (15 \text{ dm})^2 = (17 \text{ dm})^2$$

$$h^2 + 15 \text{ dm} \times 15 \text{ dm} = 17 \text{ dm} \times 17 \text{ dm.}$$

$$h^2 + 225 \text{ dm}^2 = 289 \text{ dm}^2$$

$$h^2 + 225 \text{ dm}^2 - 225 \text{ dm}^2 = 289 \text{ dm}^2 - 225 \text{ dm}^2$$

$$\sqrt{h^2} = \sqrt{64 \text{ dm}^2}$$

$$h = 8 \text{ dm.}$$

$$A = \frac{1}{2} \times b \times h.$$

$$A = \frac{1}{2} \times 30 \text{ dm} \times 8 \text{ dm.}$$

$$A = 120 \text{ dm}^2.$$

(39)

$$(b) \frac{4}{5} \div \frac{9}{14} \text{ of } \frac{3}{7} + 2\frac{7}{15}$$

$$\left(\frac{4}{5} \div \frac{9}{14} \right) \text{ of } \frac{3}{7} + 2\frac{7}{15}$$

$$\frac{4}{5} \times \frac{14}{9}$$

$$\left(\frac{56}{45} \times \frac{3}{7} \right) + 2\frac{7}{15}$$

$$\frac{8}{15} + 2\frac{7}{15}$$

$$\frac{8}{15} + \frac{37}{15}$$

$$\frac{45}{15}$$

3

BODMAS

$$(b) \frac{0.78 \times 0.018}{0.36 \times 1.3}$$

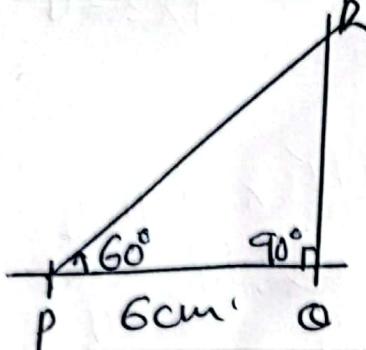
$$\left(\frac{78}{100} \times \frac{18}{1000} \right) \div \left(\frac{36}{100} \times \frac{13}{10} \right)$$

$$\frac{\frac{78}{100} \times \frac{18}{1000}}{\frac{36}{100} \times \frac{13}{10}}$$

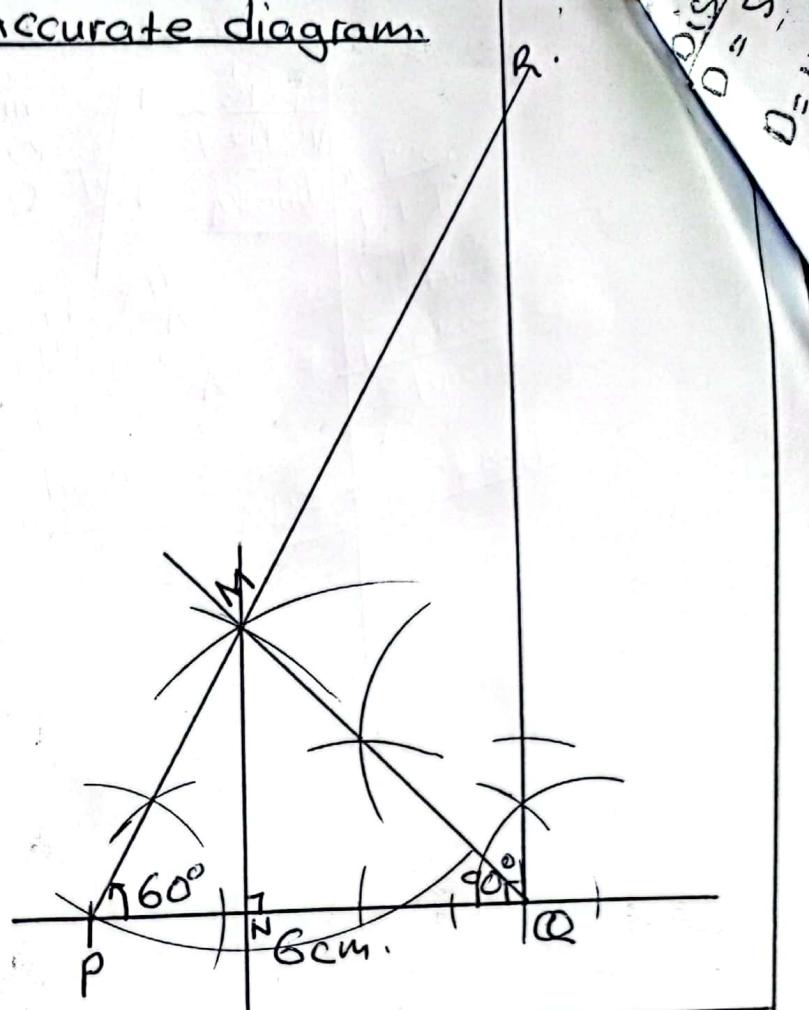
$$\frac{0.03}{100}$$

$$0.03$$

41. Sketch diagram.



Accurate diagram.



(c) $NM = 4 \text{ cm}$.

$$A = \frac{1}{2} \times b \times h$$

$$A = \frac{1}{2} \times 6^3 \text{ cm} \times 4 \text{ cm}$$

$$A = 12 \text{ cm}^2$$

42. Distance in cm.

$$1 \text{ km} = 100,000 \text{ cm}$$

$$5.94 \text{ km} = \frac{594}{100} \times 100,000 \text{ cm}$$

$$594000 \text{ cm.}$$

Circumference of the wheel 396

$$C = \frac{1980}{62840000 \text{ cm}} \\ 15\phi\phi$$

$$C = 396 \text{ cm.}$$

$$\pi d = C$$

$$\frac{22}{7}d = 396 \text{ cm} \times 7$$

$$\frac{22}{22}d = \frac{396}{7} \times 18$$

$$d = 18 \text{ cm} \times 7$$

$$d = 126 \text{ cm.}$$

$$\text{radius} = \frac{d}{2}$$

$$r = \frac{126}{2} \text{ cm}$$

$$r = 63 \text{ cm.}$$

Distance from A to B:

$$= S \times T$$

$$D = \frac{48 \text{ km}}{\text{hour}} \times 2\frac{1}{2} \text{ hours}$$

$$D = \frac{24}{48 \text{ km}} \times 5$$

$$D = 120 \text{ km.}$$

Distance from B to C:

$$D = S \times T$$

$$D = \frac{40 \text{ km}}{\text{hour}} \times 2 \text{ hours}$$

$$D = 80 \text{ km.}$$

Time taken:

HR & mins

10 00 + 60

- 7 30

2 30

$$T = 2 \frac{3}{2} \text{ hours}$$

$$T = 2 \frac{1}{2} \text{ hours.}$$

Returning time to A

$$T = \frac{D}{S}$$

$$T = \frac{200 \text{ km}}{100 \text{ km}} \times 1 \text{ h}$$

$$T = 2 \text{ hours}$$

$$(b) AV.S = \frac{T \cdot D \cdot C}{T \cdot T \cdot T}$$

$$AV.S = \frac{200 \text{ km} + 200 \text{ km}}{8 \text{ hours}}$$

$$AV.S = \frac{400 \text{ km}}{8 \text{ hours}}$$

$$AV.S = 50 \text{ km/h.}$$

